

polymerase, [~~Thermococcus litoralis~~] Thermococcus litoralis DNA polymerase, and
[Pyrococcus] Pyrococcus GB-D DNA polymerase.

38. (Amended) A method according to Claim 37, wherein said first DNA
polymerase is [Pyrococcus furiosus] Pyrococcus furiosus DNA polymerase.

39. (Amended) A method according to Claim 36, wherein the second DNA
polymerase is selected from the group consisting of [Thermus aquaticus] Thermus
aquaticus DNA polymerase, (exo-) [~~Thermococcus litoralis~~] Thermococcus litoralis DNA
polymerase, (exo-) [Pyrococcus furiosus] Pyrococcus furiosus DNA polymerase, and
(exo-) [Pyrococcus] Pyrococcus GB-D DNA polymerase.

40. (Amended) A method according to Claim 36, wherein said second DNA
polymerase is [Thermus aquaticus] Thermus aquaticus DNA polymerase.

42. (Amended) A method according to Claim 38, wherein said second DNA
polymerase is [Thermus aquaticus] Thermus aquaticus DNA polymerase.

43. (Amended) A kit according to Claim 34, wherein said first DNA
polymerase is selected from the group consisting of [Pyrococcus furiosus] Pyrococcus
furiosus DNA polymerase, [Thermotoga maritima] Thermotoga maritima DNA
polymerase, [~~Thermococcus litoralis~~] Thermococcus litoralis DNA polymerase, and
[Pyrococcus] Pyrococcus GB-D DNA polymerase.

44. (Amended) A kit according to Claim 43, wherein said first DNA
polymerase is [Pyrococcus furiosus] Pyrococcus furiosus DNA polymerase.

45. (Amended) A kit according to Claim 34, wherein the second DNA
polymerase is selected from the group consisting of [Thermus aquaticus] Thermus

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~~*aquaticus* DNA polymerase, (exo-) [Thermococcus litoralis] *Thermococcus litoralis* DNA polymerase, (exo-) [Pyrococcus furiosus] *Pyrococcus furiosus* DNA polymerase, and (exo-) [Pyrococcus] *Pyrococcus* GB-D DNA polymerase.~~

46. (Amended) A kit according to Claim 45, wherein said second DNA polymerase is [Thermus aquaticus] *Thermus aquaticus* DNA polymerase.

Please add the following new claims:

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~~52. A composition comprising:~~

~~(a) a first DNA polymerase, wherein said first polymerase possesses 3'-5' exonuclease activity, and~~

~~(b) a second DNA polymerase, wherein said second polymerase lacks 3'-5' exonuclease activity.~~

53. A composition according to Claim 52, wherein said first and second DNA polymerases are thermostable.

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~~54. A composition according to Claim 53, wherein said second DNA polymerase is *Thermus aquaticus* DNA polymerase.~~

55. A composition according to Claim 53, wherein said first DNA polymerase is selected from the group consisting of *Pyrococcus furiosus* DNA polymerase, *E. coli* DNA polymerase I, Klenow fragment, T-4 polymerase, T-7 polymerase, *Thermotoga maritima* DNA polymerase, *Thermococcus litoralis* DNA polymerase, and *Pyrococcus* GB-D DNA polymerase.

56. A composition according to Claim 53, wherein said first DNA polymerase is selected from the group consisting of *Pyrococcus furiosus* DNA polymerase, *Thermotoga maritima* DNA polymerase, *Thermococcus litoralis* DNA polymerase, and *Pyrococcus* GB-D DNA polymerase.

57. A composition according to Claim 54, wherein said first DNA polymerase is *Pyrococcus furiosus* DNA polymerase.

58. A composition according to Claim 56, wherein said first DNA polymerase is *Thermococcus litoralis* DNA polymerase.

59. A composition according to Claim 56, wherein said first DNA polymerase is *Pyrococcus* GB-D DNA polymerase.

60. A composition according to Claim 56, wherein said first DNA polymerase is *Thermotoga maritima* DNA polymerase.

61. A composition according to Claim 58, wherein the second DNA polymerase is *Thermus aquaticus* DNA polymerase.

62. A composition according to Claim 58, wherein the second DNA polymerase is (exo-) *Thermococcus litoralis* DNA polymerase.

63. A composition according to Claim 58, wherein the second DNA polymerase is (exo-) *Pyrococcus furiosus* DNA polymerase.

64. A composition according to Claim 58, wherein the second DNA polymerase is (exo-) *Pyrococcus* GB-D DNA polymerase.

65. A composition according to Claim 59, wherein the second DNA polymerase is *Thermus aquaticus* DNA polymerase.

66. A composition according to Claim 59, wherein the second DNA polymerase is (exo-) *Thermococcus litoralis* DNA polymerase.

67. A composition according to Claim 59, wherein the second DNA polymerase is (exo-) *Pyrococcus furiosus* DNA polymerase.

68. A composition according to Claim 59, wherein the second DNA polymerase is (exo-) *Pyrococcus* GB-D DNA polymerase.

69. A composition according to Claim 60, wherein the second DNA polymerase is *Thermus aquaticus* DNA polymerase.

70. A composition according to Claim 60, wherein the second DNA polymerase is (exo-) *Thermococcus litoralis* DNA polymerase.

71. A composition according to Claim 60, wherein the second DNA polymerase is (exo-) *Pyrococcus furiosus* DNA polymerase.

72. A composition according to Claim 60, wherein the second DNA polymerase is (exo-) *Pyrococcus* GB-D DNA polymerase.

73. A composition according to Claim 52, wherein said first and second DNA polymerases are not thermostable.

74. A composition according to Claim 73, wherein the first DNA polymerase is selected from the group consisting of T-4 DNA polymerase, T-7 DNA polymerase, *Escherichia coli* DNA polymerase I, *Escherichia coli* DNA polymerase I Klenow fragment, and *Escherichia coli* DNA polymerase III, and wherein the second DNA polymerase is (exo-) T-7 DNA polymerase.

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75. A method of synthesizing a polynucleotide sequence, said method comprising: the steps of mixing a composition, with a synthesis primer, and a synthesis template, said composition comprising

- (a) a first DNA polymerase possessing 3'-5' exonuclease activity, and
- (b) a second DNA polymerase, wherein said polymerase lacks 3'-5' exonuclease activity.

76. A method according to Claim 75, wherein said first and second DNA polymerases are thermostable.

77. A method according to claim 76, wherein said first DNA polymerase is selected from the group consisting of *Pyrococcus furiosus* DNA polymerase, *Thermotoga maritima* DNA polymerase, *Thermococcus litoralis* DNA polymerase, and *Pyrococcus* GB-D DNA polymerase.

78. A method according to Claim 77, wherein said first DNA polymerase is *Pyrococcus furiosus* DNA polymerase.

79. A method according to Claim 76, wherein the second DNA polymerase is selected from the group consisting of *Thermus aquaticus* DNA polymerase, (exo-) *Thermococcus litoralis* DNA polymerase, (exo-) *Pyrococcus furiosus* DNA polymerase, and (exo-) *Pyrococcus* GB-D DNA polymerase.

80. A method according to Claim 76, wherein said second DNA polymerase is *Thermus aquaticus* DNA polymerase.

81. A method according to Claim 77, wherein the second DNA polymerase is selected from the group consisting of *Thermus aquaticus* DNA polymerase, (exo-)